14/Reply Brief
AF/GP-2774-1999

Serial No. 08/518,051 Navy Case No. 74023

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No:	08/518,051	Examiner:	Amare Mengistu
Filing date:	August 22, 1995		
Appellants:	Stephen D. Russell, et al	Art Unit:	2774

Title: PROGRAMMABLE GRAY-SCALE LIQUID CRYSTAL DISPLAY

Commissioner of Patents and Trademarks
Washington, DC 20231

REPLY BRIEF

Sir:

Appellants hereby submit this reply brief under 37 CFR §1.193(b)(1) in response to the Examiner's Answer mailed on December 2, 1998.

ISSUES

Response to allegation of new matter

The Examiner's Answer alleges that new matter was introduced by "driver interface circuit" on the revision of Fig. 4 mailed on September 16, 1997. However, Fig. 4 was last revised by the amendment mailed on January 13, 1998 to include reference numerals as suggested by the examiner in Paper No. 5. Copies of Fig. 3A and the current version of Fig. 4 submitted with the amendment of January 13, 1998 are attached as Exhibits "A" and "B" respectively for the Board's convenience. The reference characters "driver interface circuit" do not appear on Fig. 4 as alleged and objected to in the Examiner's Answer.

Assuming arguendo that the objection was intended to refer to the claimed driver and interface circuitry shown in Fig. 4 by reference characters 46 and 48 respectively, there is proper support for "driver interface circuit" in the original specification on page 10, lines 1-7:

> " ... SOS wafers 42 comprising the integrated drive control and pixel electrode circuitry. The drive control electronics may include circuitry to detect failure conditions in the display, to calibrate the display gray-scale, or to switch to alternative pixel configurations for replacing defective pixels. The circuitry need not be identical on each of SOS wafers 42, but preferably includes common drive and interface circuitry."

The "drive and interface circuitry" described above in the originally filed disclosure is also the claimed driver and interface circuitry recited in the originally filed claim 4.

Because the claimed driver and interface circuitry is disclosed in the originally filed description and in the originally filed claims, the inclusion of "driver interface circuitry"

shown in Fig. 4 by reference characters 46 and 48 is not new matter as alleged in the Examiner's Answer.

The Examiner's Answer further alleges that "programmable gray-scale LCD 40" is new matter introduced by page 2, lines 2-11 of the amendment mailed on January 13, 1998, reproduced here as follows:

p. 6, ln. 20: Before "Fig. 4" insert --
Fig. 3A illustrates the programmable gray-scale LCD of the present invention in a typical configuration including a polarizer and an analyzer.

p. 9, ln. 23: After "." Insert --Interface circuitry 46 and electronically programmable driver circuitry 48 may be formed on SOS wafers 42 according to well known techniques to provide gray-scale control 50. Programmable gray-scale LCD 40 may be applied to the typical configuration of Fig. 3 with polarizer 16 and analyzer 17 as shown in Fig. 3A.--.

Support for "programmable gray-scale LCD 40" objected to as new matter in the above amendment may be found in the originally filed specification as follows:

in the title: PROGRAMMABLE GRAY-SCALE LIQUID CRYSTAL DISPLAY;

on page 5, line 8: "A programmable gray-scale liquid crystal display comprises ... a sequence of liquid crystal display pixels serially aligned with the beam of polarized light ...";

on page 6, lines 5-6: " ... a plurality of liquid crystal display pixels are concatenated to form a display having a gray-scale that is programmable ...";

on page 9, lines 2-3: "Fig. 4 is a diagram of a fault tolerant, programmable gray-scale LCD 40 of the present invention ..."

on page 9, lines 17-21: "Each of SOS wafers 42 may be fabricated independently and joined in the final steps of fabrication. The combination of spacers 44 and SOS wafers 42 results in a serial arrangement of pixels in optically coupled independent displays";

on page 11, lines 14-16: "The pixel elements on each of display regions 11 of SOS wafers 44 are serially aligned to form pixel sequences ...";

and on page 11, lines 17-22: "The drive control electronics may include circuitry to detect failure conditions in the display, to calibrate the display gray-scale, or to switch to alternative pixel configurations for replacing defective pixels. The circuitry need not be identical on each of SOS wafers 42, but preferably includes common drive and interface circuitry."

The relevant portions of the originally filed specification quoted above include all the features of the proposed amendment. Because the contents of the amendment are disclosed in the originally filed specification, "programmable gray-scale LCD 40" is not new matter introduced by the amendment.

Because the PTO has raised the allegation of new matter as an issue on appeal, the additional forum of a petition should not be necessary. If the Board disagrees, Appellants would be pleased to submit a petition to withdraw the objection.

Response to rejection of claims 1-3, 6, 10, 11 under 35 USC §102(b)

Claims 1-3, 6, 10, 11 were rejected under 35 USC §102(b) as being anticipated by admitted prior art. Page 4 of the Examiner's Answer alleges that the features referenced as 10 and 14 in Figs. 1-3 are identical to the claimed pixel sequence aligned collinearly along the beam of polarized light. The allegation errs in arbitrarily redefining features 10 and 14 for the purpose of composing the rejection rather than properly showing that the prior art teaches each and every feature of the claimed invention as required by MPEP

§2131. The actual definition of features 10 and 14 of the prior art as defined by Appellants on page 7, lines 11-14, is as follows:

> "a liquid crystal medium 10 is contained within transparent electrodes 12 to form a pixel element 14";

and on page 8, lines 10-12:

> "Typical LCDs are fabricated from a plurality of pixel elements 14, usually in a two-dimensional array or display area."

Nothing in the above description or in Figs. 1-3 teaches the claimed pixel sequence collinearly aligned with the claimed beam of light as implied by the rejection.

In contrast with the single liquid crystal layer 10 of Figs. 1-3 in which pixel elements 14 and liquid crystal layer 10 are shown orthogonally aligned with the beam of light, the claimed collinearly aligned pixels result from multiple serially aligned liquid crystal layers 10 as shown in Fig. 4 and explained in the application as follows:

on page 9, lines 7-12:

> "SOS wafers 42A, 42B, and 42C are referred to collectively as SOS wafers 42. The cavity formed by SOS wafers 42 and spacers 44 are filled with an appropriate liquid crystal material 10, such as nematic, supertwisted nematic or ferroelectric liquid crystals, and interposed between SOS wafers 42";

on page 9, lines 19-21:

> "The combination of spacers 44 and SOS wafers 42 results in a serial arrangement of pixels in optically coupled independent displays";

on page 11, lines 14-16:

> "The pixel elements on each of display regions 11 of SOS wafers 44 are serially aligned to form pixel sequences ...";

and in claim 1:

" ... a pixel sequence ... comprising multiple liquid crystal display pixels aligned collinearly along the beam of polarized light."

The above description is depicted in Figs. 3A and 4, which show multiple liquid crystal layers 10 of programmable gray-scale liquid crystal display 40 serially arranged in collinear alignment with the beam of polarized light 22. In other words, the beam of polarized light 22 defines a line between the pixel it intersects in the first liquid crystal region 10 and the pixel it intersects in the second liquid crystal region 10. There are therefore two pixels in the example shown in Figs. 3A and 4 that lie on the same straight line defined by the beam of polarized light passing through liquid crystal display 40, i.e., the pixels are aligned collinearly with the beam of polarized light.

Because the prior art does not disclose the claimed display pixels aligned collinearly along the claimed beam of polarized light, the claimed pixel sequence is not anticipated by the prior art shown in Figs. 1-3.

Response to rejection of claims 4, 5, 8, 9 under 35 USC §103(a)

Claims 4, 5, 8, 9 were rejected under 35 USC §103(a) as being unpatentable under 35 USC §103(a) over admitted prior art in view of Johary et al (5,196,839). The Examiner's Answer cites the admitted prior art shown in Figs. 1-3 as disclosing "a liquid crystal display with a gray-scale control", and Johary is cited "to teach that it is well known for a gray scale display circuit to have gray scale generators (drivers) to provide gray-scale at the display." The rejection fails to cite any reference that teaches or suggests the claimed pixel sequence aligned collinearly along the claimed beam of polarized light.

Because the references do not teach or suggest all the claimed limitations, the rejection fails meet the burden of the PTO under MPEP §706.02(j) and §2143.

Even assuming arguendo that the Examiner's Answer intended to cite the admitted prior art as disclosing the claimed pixel sequence, no explanation has been presented by the PTO that would substantiate such an allegation.

Because the cited references do not teach or suggest all the claimed limitations, claims 4, 5, 8, 9 are not obvious under 35 USC §103(a).

Response to rejection of claim 7 under 35 USC §103(a)

Claim 7 was rejected under 35 USC §103(a) as being unpatentable over admitted prior art in view of Kobayashi et al (5,680,185). The rejection presented in the Examiner's Answer is quoted verbatim from the final rejection in Paper No. 7, which was quoted verbatim from the same rejection in Paper No. 5:

> "In regard to claim 7, Applicant's Admitted prior Art discloses a liquid crystal display having a substrates (page 2, lines 5-10), but failed the substrate being a sapphire substrates. However, Kobayashi et al clearly shows that the substrates could be made of sapphire substrates (col. 14, lines 39-46).
> Therefore, it would have been obvious to one skill in the art at the time of the invention was made to have used Kobayashi's sapphire substrate into the device of Applicant's Admitted Prior Art device since this will greatly reduce the interface properties and enabling a high quality silicon layer."

The rejection so blatantly ignores fundamental rules of grammar and wanders so far beyond the scope of the claimed limitations that one can hardly imagine how it might be relevant to the appealed claims. Although Appellants traversed this rejection in the amendment of January 13, 1998, in the amendment of April 29, 1998, and in the Appeal

Brief, the rejection has merely been repeated in a manner that is callously non-responsive to Appellants' arguments. The PTO has clearly not complied with the requirement of MPEP §707.07(f):

> "When the applicant traverses any rejection, the examiner should, if he or she repeats the rejection, take note of the applicant's argument and answer the substance of it."

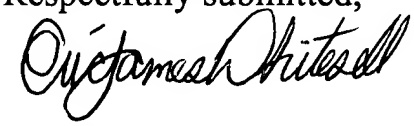
Further, the rejection fails to show that the cited references teach or suggest all the limitations of the rejected claim, therefore the rejection does not meet the burden required of the PTO under MPEP §706.02(j) and §2143.

Because the cited references do not teach or suggest all the claimed limitations, claim 7 is not obvious under 35 USC §103(a).

Conclusion

As explained above, the objections of new matter and the rejections under 35 USC §102(b) and 35 USC §103(a) are unwarranted and unsubstantiated. Appellants therefore request that they be reversed and that claims 1-11 be favorably reconsidered.

Respectfully submitted,



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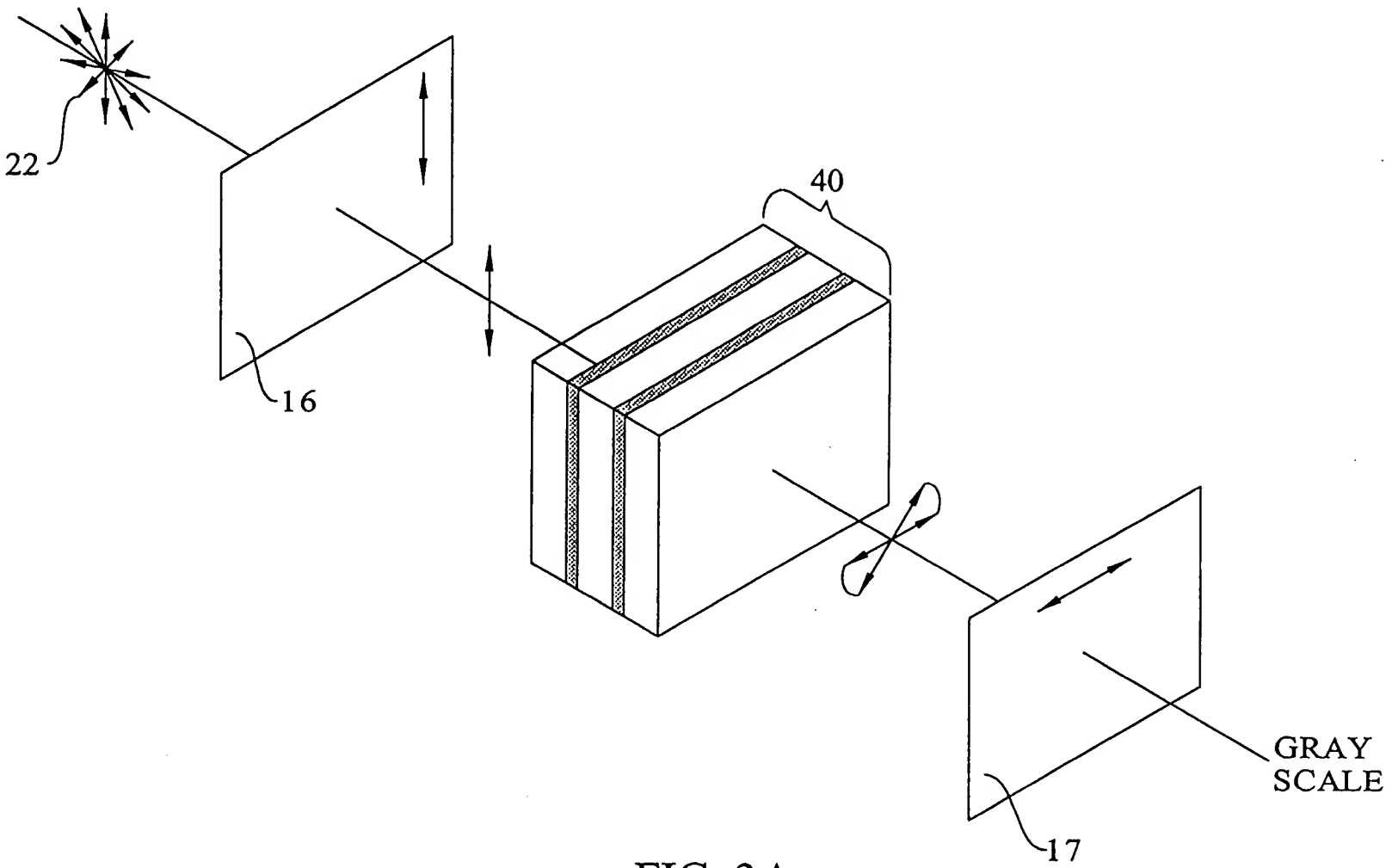

FIG. 3A

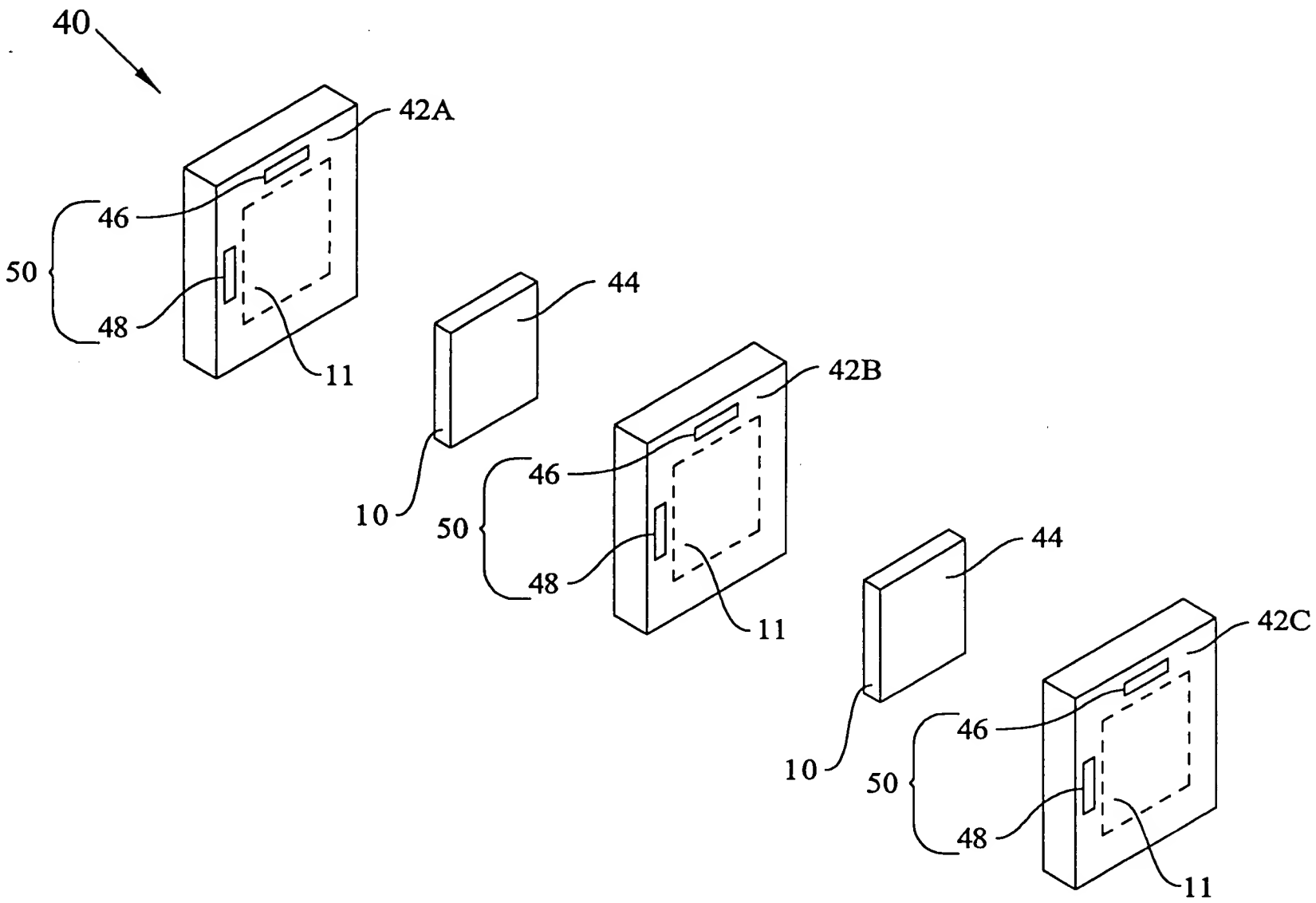

FIG. 4